

Cryptosphaeria Canker

Long, narrow canker kills aspen

Pathogen—Cryptosphaeria canker is caused by the fungus *Cryptosphaeria lignyota* (formerly known as *C. populina*). The anamorph (asexual stage) is *Libertella* sp. The disease is also sometimes called “snake canker.”

Hosts—The disease occurs on quaking aspen and other *Populus* species in the Rocky Mountains. The pathogen has been found throughout much of North America and in Europe.

Signs and Symptoms—Cryptosphaeria cankers are usually much longer and narrower than other cankers of aspen (fig. 1). Cankers may only be 2-4 inches (5-10 cm) wide and 10 ft (3 m) long. They may ultimately extend for much of the stem length or occur primarily in the portion of the stem with live branches.

Bark recently killed near the margin of the canker becomes discolored light brown to orange. Within a year or two, dead inner bark becomes stringy, black, and sooty, much like sooty-bark canker, but usually contains small (1/50-1/13 inch [0.5-2.0 mm]), lenticular, light-colored areas (fig. 2). Annual callus formation may be visible. Dead bark adheres tightly to cankers.

The disease is actually a canker-rot. The pathogen colonizes the heartwood and sapwood, causing discoloration and decay. Discoloration may have hues of gray, brown, yellow, orange, and even pink and extends up to 3.3 ft (1 m) or more beyond the canker. The decay is brownish and mottled and is probably a type of soft rot similar to white rot, as is typical of wood-decaying ascomycetes. The fungus grows out from the wood to the cambium and bark, causing the canker.

Mortality usually occurs in small trees after only a few years and before the canker girdles the stem. Killing of sapwood apparently causes more damage than the canker itself. Large trees may be killed more slowly as their branches are engulfed in the canker. Especially on large trees, branches may be infected first, from which the pathogen can spread to the stem.

Cytospora chrysosperma frequently infects and fruits at the margin of Cryptosphaeria cankers and quickly colonizes trees after they die, so the cause of death may be misattributed to Cytospora canker. For this reason, and because the pathogen may not fruit reliably, especially on small trees, diagnosis should be made by looking for the lenticular, light-colored areas in bark and the staining in the sapwood.

Disease Cycle—The fungus frequently infects trees through wounds. As described above, it appears to progress primarily through wood, then move out to cambium and bark. Black perithecia of the pathogen may appear scattered on bark that has been dead for a year or two (fig. 3), although fruiting may not occur on small trees. Beneath the surface, the perithecia are embedded in a widely spread pseudostroma.

Ascospores are forcibly ejected from perithecia during wet weather and presumably dispersed by wind. Conidia can also be produced but may function only in fertilization.



Figure 1. Cryptosphaeria canker killing an aspen. The canker winds around this tree all the way up to the live crown. Photo: Jim Worrall, USDA Forest Service



Figure 2. Light-colored lenticular spots that frequently appear in older dead bark of canker caused by *Cryptosphaeria lignyota*. Live bark is at the left-most margin of the cut. Photo: Jim Worrall, USDA Forest Service.

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Impact—Cryptosphaeria canker is an important killer of aspen. In one Colorado survey, 83% of 30 surveyed sites had Cryptosphaeria canker, and 26% of aspen mortality was attributed to the disease. Unlike sooty-bark canker, it seemed to kill mostly small to mid-size trees. It is estimated that about 8% of aspen in Colorado have decay caused by *C. lignyota*. Cryptosphaeria canker is one of a number of wound-infecting cankers that leads to mortality following partial cutting of aspen stands and also in developed recreation sites established in aspen.

Management—Wounding should be prevented. However, many infections are due to natural infection courts, and practical means of preventing such infection are not known. In timber stands, partial cutting of aspen is strongly discouraged because the residual stand often deteriorates in 5-10 years. Therefore, where the disease threatens management objectives, early harvest or regeneration should be considered. Similarly, development of recreation sites in aspen stands is strongly discouraged by Regional policy because cankers such as this one cause rapidly increased mortality following development and use.

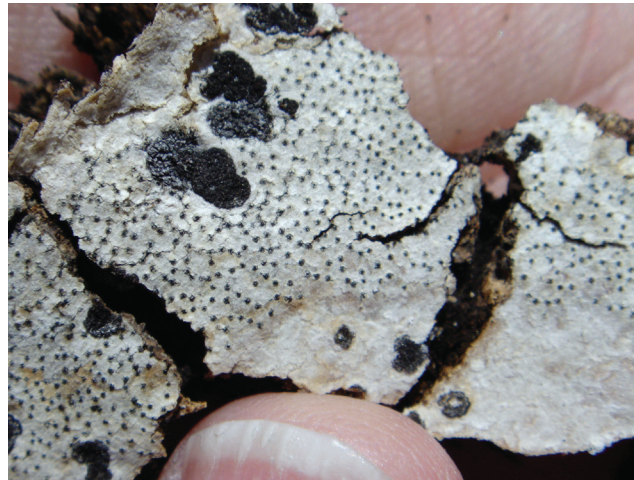


Figure 3. Perithecia (fruiting bodies) of *Cryptosphaeria lignyota*.
Photo: Jim Worrall, USDA Forest Service.

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